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DRAFT FINAL
PROPOSED REMEDIAL ACTION PLAN
BUILDING LP-20 SITE
NAVAL BASE NORFOLK, VIRGINIA
CONTRACT TASK ORDER 0269
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Prepared For:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
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EXECUTIVE SUMMARY

INTRODUCTION

This Proposed Remedial Action Plan (PRAP) is issued to describe the Department of the Navy's (DoN's) preferred remedial actions for the Building LP-20 site at the Naval Air Station (NAS) Norfolk, Norfolk, Virginia. The DoN is issuing this PRAP in fulfillment of the public participation responsibility established under Section 117(a) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The DoN, with assistance of the United States Environmental Protection Agency (USEPA) Region III and the Virginia Department of Environmental Quality (VADEQ), will select a final remedy for the Building LP-20 site after the public comment period has ended and the information submitted during this time has been reviewed and considered. The Final Decision Document (DD) may recommend different remedial actions than those presented in this plan, depending upon new information or public comments.

This PRAP summarizes information that can be found in greater detail in the Remedial Investigation/Feasibility Study (RI/FS) Reports prepared for the Building LP-20 site. The DoN encourages the public to review these documents in order to gain a more comprehensive understanding of the site and the proposed remedial action. The public also is invited to comment on the PRAP.

SITE BACKGROUND

The LP-20 Site is located within the Naval Aviation Depot (NADEP) Area of the Naval Air Station (NAS) Norfolk. The NADEP Area provides support for aircraft maintenance and repair activities associated with NAS Norfolk. The NADEP Area is scheduled for closure under the Base realignment and closure (BRAC) plan. Under the closure plan, the current mission of Building LP-20 may change from an engine overhaul facility to a warehouse or other related function. Although Building LP-20 may be realigned to a new command under the BRAC plan, it is expected to always remain part of the Naval Base.

The LP-20 Site is highly industrialized. Nearly the entire area is covered with buildings or pavement, and there are numerous underground utilities. To provide support for aircraft maintenance and repair, many activities performed in the vicinity of Building LP-20 utilize solvents, aviation fuel, and other petroleum products. Over the years, there have been numerous documented spills or releases of wastewater, petroleum products, and other chemicals in this area. These incidents have resulted in releases ranging from less than five gallons to more than 4,600 gallons.

Due to the amount of petroleum releases which have occurred in the area, free product has been observed in several areas in the vicinity of Building LP-20. Because of the presence of petroleum contamination, the Naval Facilities Engineering Command (LANTDIV) Underground Storage Tank (UST) Department has undertaken several steps to recover the free product. The remediation of the free product identified at the site is to be performed by the LANTDIV UST Department and is not intended to be addressed by this PRAP.

REMEDIAL INVESTIGATION RESULTS

Data generated during the RI indicate that volatile organic compounds (VOCs) are the primary contaminants detected in the area. Two types of VOC contaminants were detected in the Building LP-20

area: chlorinated solvents occur in the vicinity of Buildings LP-20 and LP-26, and petroleum products occur east of Building LP-22 and south of Building LP-179. The following sections briefly describe the contaminants which have impacted the soils and groundwater.

Surface and Subsurface Soils

VOCs, semivolatile organic compounds (SVOCs), and metals detected in the surface and subsurface soils collected during the RI indicate the soils have been impacted by organic and inorganic contaminants. However, all VOCs in shallow and deep soils were below risk based concentrations (RBCs). SVOCs primarily were present in shallow and deep samples obtained near Building V-147 and may not be related to past activities at the LP-20 site. Arsenic, beryllium, and iron exceeded RBCs in the shallow soils with arsenic and beryllium exceeding RBCs in the deep soils.

Shallow Aquifer

The shallow groundwater in the vicinity of Building LP-20 has been impacted by past activities performed in the area. The contaminants detected in this area are representative of chlorinated solvents. Primary VOCs found in the monitoring wells installed in the vicinity of Buildings LP-20 and LP-26 include:

- Vinyl chloride - 15,000 micrograms per liter ($\mu\text{g/L}$)
- 1,2-Dichloroethene (DCE) (total) - 28,000 $\mu\text{g/L}$
- Trichloroethene (TCE) - 23,000 $\mu\text{g/L}$

In the area near Buildings LP-13 and LP-14, the contaminant plume consists of both chlorinated solvents and petroleum hydrocarbons. The primary VOCs detected include:

- Benzene - 860 $\mu\text{g/L}$
- Vinyl chloride - 3,700 $\mu\text{g/L}$
- 1,2-DCE (total) - 15,000 $\mu\text{g/L}$
- TCE - 2,700 $\mu\text{g/L}$

In general, VOCs were present in shallow groundwater across the site in concentrations well above the Federal Maximum Contaminant Levels (MCLs) for drinking water. However, the shallow aquifer is not suitable for drinking water purposes. Therefore, the immediate impact to potential human receptors is limited.

Yorktown Aquifer

Although the level of contamination is significantly lower than detected in the shallow water table aquifer, it appears that the Yorktown Aquifer has been impacted by VOC contaminants. The primary VOCs detected include:

- Vinyl chloride - 50 $\mu\text{g/L}$
- 1,2-DCE (total) - 960 $\mu\text{g/L}$
- TCE - 110 $\mu\text{g/L}$
- Benzene - 19 mg/L

These contaminants were also detected above Federal MCLs. However, the Yorktown Aquifer is not used for drinking water purposes in this area. Therefore, the immediate impact to potential human receptors is limited.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) for the LP-20 Site have been developed considering the following factors: the nature and extent of groundwater contamination; the current and potential future beneficial uses of the groundwater aquifers; the potential human health and ecological risks posed by the site; and the technical limitations of groundwater remediation. Remedial action objectives for both the shallow aquifer and the Yorktown Aquifer are presented below.

Shallow Aquifer

- Protect public health by ensuring no future non-potable use of groundwater in the shallow aquifer in the vicinity and downgradient of the site through aquifer use restrictions that would prohibit groundwater use in this area.
- Remediation of the shallow aquifer to risk-based remediation goals to restore the beneficial use of the aquifer for non-potable, industrial use and to prevent migration of groundwater exceeding risk-based remediation goals.

Yorktown Aquifer

- Protect public health by ensuring no future potable or non-potable use of groundwater in the Yorktown Aquifer in the vicinity and downgradient of the site through aquifer use restrictions that would prohibit groundwater use in this area.
- Remediation of the Yorktown Aquifer to risk-based remediation goals to restore the beneficial use of the aquifer for non-potable, industrial use.
- Monitoring of the Yorktown Aquifer to assess whether or not it is being adversely impacted by groundwater contamination present in the overlying shallow aquifer.

REMEDIAL ALTERNATIVES

Remedial alternatives were evaluated for both the shallow and Yorktown Aquifers, summaries of the remedial alternatives evaluated for each aquifer are presented in Final Feasibility Study and the PRAP. To distinguish the shallow aquifer remediation alternatives from the Yorktown Aquifer alternatives, the shallow aquifer alternatives have been designated by the letter "S", while the Yorktown Aquifer alternatives are designated by the letter "Y".

The following potential remedial action alternatives have been developed for the shallow aquifer:

- Alternative 1S - No Action
- Alternative 2S - Aquifer Use Restrictions and Monitoring
- Alternative 3S - Air Sparging and Soil Vapor Extraction
- Alternative 4S - In-Well Aeration
- Alternative 5S - Groundwater Extraction and Treatment

The following potential remedial action alternatives have been developed for the Yorktown Aquifer:

- Alternative 1Y - No Action
- Alternative 2Y - Aquifer Use Restrictions and Monitoring
- Alternative 3Y - In-Well Aeration
- Alternative 4Y - Groundwater Extraction and Treatment

The preferred remediation technology to address contamination in the shallow water table aquifer is Alternative 3S- Air Sparging and Soil Vapor Extraction. This remediation alternative consists of three primary actions:

- Air Sparging and Soil Vapor Extraction
- Long-Term Groundwater Monitoring
- Aquifer-Use Restrictions

Alternative 3S was selected over the other four alternatives based on the following criteria:

- Protection of human health and the environment
- Cost effectiveness
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Upon the comparison of Alternative 3S to the other remediation alternatives, several primary factors eliminated the remaining four alternatives from consideration. These factors are:

- Alternative 1S does not reduce contaminant levels or restrict potential human pathways for exposure.
- Alternative 2S does not reduce contaminant levels or prevent the migration of contaminants to Willoughby Bay.
- Alternative 4S may not be as effective in areas of petroleum contamination and is less proven than Alternative 3S.
- The length of operation and overall costs required to perform Alternative 5S were higher than Alternatives 3S and 4S.

The groundwater monitoring program for Alternative 3S would be implemented to assess trends in groundwater quality over time and to evaluate the effectiveness of the groundwater remediation alternative. Additionally, deed restrictions would be implemented to limit the area to non-residential uses and to restrict the usage of the shallow groundwater. The implementation of Alternative 3S would achieve all the RAOs in the most effective and economical manner.

The preferred remediation technology to address contamination in the Yorktown Aquifer is Alternative 2Y- Aquifer Use Restrictions and Monitoring. This remediation alternative consists of two primary actions:

- Long-Term Groundwater Monitoring
- Aquifer-Use Restrictions

Alternative 2Y was selected over the other three alternatives based on the following criteria:

- Protection of human health and the environment
- Cost effectiveness
- Compliance with ARARs

Upon the comparison of Alternative 2Y to the other remediation alternatives, several primary factors eliminated the remaining three alternatives from consideration. These factors are:

- Alternative 1Y does not restrict potential human pathways for exposure.
- In contrast to the shallow aquifer, the levels of contamination in the Yorktown Aquifer are much lower, and the extent of contamination is much less. Therefore, with treatment of the shallow groundwater, Alternative 2Y should achieve cleanup levels and RAOs through natural processes and is the most cost-effective remedy.
- Although Alternative 2Y would not achieve cleanup levels and RAOs as quickly as Alternative 3Y, it should eventually achieve them at a much lower cost.
- The groundwater monitoring program for Alternative 2Y would be implemented to assess trends in groundwater quality over time and to evaluate the effectiveness of the groundwater remediation alternative performed within the shallow aquifer.
- Deed restrictions would be implemented to limit the area to non-residential uses and to restrict the usage of the Yorktown Aquifer.

PUBLIC COMMENT PERIOD

The public comment period for this PRAP for the Building LP-20 site, Naval Base Norfolk, will begin on October 1, 1996, and end on October 31, 1996. A public meeting will be held at the Naval Base, Building N-26 on October 10, 1996 at 7:00 p.m. The purpose of the meeting will be to answer questions and accept public comments on the PRAP for the Building LP-20 site.